

SUSCEPTIBILITY OF 686 STRAINS OF BETA-HEMOLYTIC STREPTOCOCCI ISOLATED FROM CASES OF PHARYNGITIS TO FIVE ANTIBIOTICS *IN VITRO*¹

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ABSTRACT

This study was undertaken to determine the antibiotic sensitivity of 686 strains of hemolytic streptococci isolated at the School of Public Health, Division of Streptococcal Studies, to five antibiotics *in vitro*. All of the strains were sensitive to penicillin, erythromycin, chloramphenicol and ampicillin; 27 (4%) of the strains were resistant to tetracyclin. The clinical implications of this study, particularly in the light of information from other areas, re-emphasize the fact that, if the blind treatment of acute upper respiratory tract infection with tetracyclin were ever justified, it has certainly ceased to be so.

INTRODUCTION

Although penicillin or erythromycin has been recommended as the antibiotic of choice for therapy of beta-hemolytic streptococcal infections, other drugs, particularly tetracyclin and ampicillin, are also used in such circumstances⁽¹⁾. The use of tetracyclin was once more commonplace because the American Heart Association's Committee on the Prevention of Rheumatic Fever stated in 1957 that tetracyclin given for 10 days is "probably as effective as oral penicillin in the therapy of streptococcal infections"⁽²⁾. Since then, reports of tetracyclin-resistant group A streptococci have appeared in the literature and have to some extent, hindered the use of tetracyclin for this pur-

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pose(3,4,5,6). To our knowledge, no information is available in Iran with regard to the sensitivity pattern of beta-hemolytic streptococci. The purpose of this paper is to report our results of the sensitivity of 686 strains of beta-hemolytic streptococci, isolated from cases of pharyngitis, to five antibiotics.

MATERIALS AND METHODS

A total of 686 strains of beta-hemolytic streptococci isolated from cases of pharyngitis from 1970-73 at the Division of Streptococcal Studies, School of Public Health, were examined. Details of primary isolation and grouping and typing methods have been reported previously (7). The susceptibility of strains to penicillin, erythromycin, ampicillin, chloramphenicol and tetracyclin was determined using the single disk method of Kirby-Bauer(8). The paper disks contained the following concentration: penicillin 10 μ ; erythromycin 15 μ g; ampicillin 10 μ g; chloramphenicol 30 μ g; tetracyclin 30 μ g.

RESULTS

All of the 686 strains were sensitive to penicillin, erythromycin, ampicillin and chloramphenicol. Twentyseven (4%) of the strains, as indicated in Table I, were resistant to tetracyclin. Of the 27 resistant strains (Table II), 13 (3.6%) were group A, (33%) group B, 4 (3.2%) group C, 2 ((1.9%) group G and 5 (6%) not group A, B, C or G. Among the 13 group A resistant strains (Table III), several different T types were present, but the numbers were not sufficient to draw any conclusion regarding the degree of resistance in different types. There are, however, reports which indicate a correlation between tetracyclin and sulfadiazine and streptococcal T types(3).

Table I

Total No .	Strains Susceptible to :				
	Pene - cillin	Erythro - mycin	Ampi - cillin	Chloram - Phenicol	Tetra - cyclin
686	686	686	686	686	659

In Table II, the 33% resistant rate, although statistically not significant, is suggestive of group-specific difference in susceptibility of group B strains to tetracyclin. Jones and Gezon also report that group B hemolytic streptococci, in comparison with group A, C and G, are least sensitive(4,5).

The overall results of tetracyclin sensitivity tests on *S. pyogenes* from different areas show great variation ranging from .5% from Kohler in Germany to

TABLE II

Group distribution of 27 strains of streptococcus pyogenes resistant to tetracyclin

Group	Sensitive	Resistant	Total	Percent Resistant
A	349	13	362	3.6
B	6	3	9	33
C	123	4	127	3.2
G	103	2	105	1.9
Not A,B,C or G	78	5	83	6
Total	659	27	686	

TABLE III

Tetracyclin resistance of group A streptococci by T type

Types	Numbers Resistant
2	4
4	3
28	2
12	1
1	1
11, 27, 44	1
Non-typable	1
Total	13

20% from Mogabgab in the U.S.A. and around 40% from Rabinowitz in Israel and Parker in England (5,1,3,6). Our results show a resistance rate of 4%. The inter-laboratory disagreement which exists for the interpretation of results in the antimicrobial susceptibility method could be partly responsible for the wide range of difference in results. Some of the reports also refer to specific outbreaks(1). Our figure of 4% resistant rate to tetracyclin, although not as high as the majority of reports indicate, has, however, the clinical implication that tetracyclin probably should not be used for the prophylaxis or treatment of streptococcal infection unless other agents, chiefly penicillin and erythromycin, are for some reason contraindicated. It further emphasizes the importance of careful laboratory control by adequate methods if tetracyclin is to be used.

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